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D. RemarksObjections to the Specification

5 The Specification has been amended to address the objections set forth in the Office Action. The amendment presents no new matter as it adds information from claim 10. As is well established, information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter.¹

10 Rejections Under 35 U.S.C. §112, Second Paragraph.

Claims 1-20 were rejected as it was argued that the term "reactive" was indefinite. Applicants' respectfully disagree. Applicants' claim 1 recites the following:

"by a reactive plasma process"

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This term is very well understood in the art, and is clearly not a relative term. Applicants submit herewith citations of the very references cited by the Examiners during examination. These citations are but a handful of the numerous uses of the term "reactive."

20 In *Van Autryve et al.* (U.S. Patent No. 6,014,979): Col. 2, Lines 1, 4, 15, 25 (numerous other uses of "reactive" follow).

In *Mintz* (U.S. Patent No. 5,391,275): Col. 2, Line 18, Col. 3, Line 21, Col. 4, Line 4, (numerous other uses of "reactive" follow).

25 In *Hira et al.* (U.S. Patent No. 5,567,333): Col. 6, Lines 54 and 64 (numerous other uses of "reactive" follow).

In *Kiziloglu et al.* (U.S. Patent No. 6,074,569): Col. 1, Lines 13, 17, Col. 2, Line 6 (numerous other uses of "reactive" follow).

30 Applicants only reviewed the above handful of references, but are very confident that the term "reactive" appears in numerous other references presented by the Patent Office during the prosecution of this application. The very limited examples above present substantial, if not

¹ See MPEP §2163.06 (emphasis added).

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conclusive, evidence that the term "reactive" is well understood in the art – and not a relative term.

Claims 6, 9 and 12 were rejected as the term "general", with reference to a range, was argued to be indefinite. Applicants respectfully disagree. The term "general" (and "generally"); like the terms "about" and "substantially", are well-established acceptable modifiers to claim language. The Federal Circuit has stated:

[T]he use of modifiers in the claim, like "generally" and "substantial," does not by itself render the claim indefinite.²

From the above, Applicants' believe the term "general" is not indefinite and would be understood by those skilled in the art. For this reason, this ground of rejection is traversed.

Claims 8 and 18-19 were rejected as the term "ultrasonically cleaning" was argued to be indefinite for failing to recite a manipulative step. This ground of rejection is not understood. The language "ultrasonically cleaning" is a clear step. The term "ultrasonic cleaning", like "reactive", is well understood in the art. The various reference cited in the prosecution of this case clearly indicate that ultrasonic cleaning is well understood. The following excerpt is taken from the previously cited reference *Walter* (U.S. Patent No. 6,348,101).

Sonic cleaning has been used for decontaminating and/or disinfecting instruments used in medical, dental, surgical or food processing, for example. This method generally involves placing the instruments in an aqueous bath and treating them with ultrasonic energy. Treatment with ultrasonic energy has long been recognized to be lethal to microorganisms suspended in a liquid, as described, for example, by Boucher in U.S. Pat. No. 4,211,744 (1980). Ultrasonic energy has also been used for cleaning and sterilizing contact lenses (U.S. Pat. No. 4,382,824 Halleck (1983)), surgical instruments (U.S. Pat. No. 4,193,818, Young et al.

² Energy Absorption Sys., Inc. v. Roadway Safety Servs., Inc., (Fed. Cir. 1997) (unpublished)

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(1980) and U.S. Pat. No. 4,448,750 (1984)) and even body parts, such as a doctor's hands (U.S. Pat. No. 3,481,687, Fishman (1969)).³

Applicants' could cite multiple other examples from other references cited by the Patent Office, but believe the above represents substantial, if not conclusive, evidence that the term "ultrasonic cleaning" is a known and understood process step.

In summary, Applicants have presented clear evidence, taken from reference submitted by the Patent Office, to show that rejected terms are not only understood, but commonly used in the art. Applicants have also shown that modifying language for claim ranges has long been held to be definite, and incapable of sustaining a rejection based indefiniteness.

Accordingly, all rejections based on this ground are traversed.

Rejection of Claims 1, 3 and 9 Under 35 U.S.C. §102(e) based on Applicants' Background Art
(Background Art).

The invention of amended claim 1 recites a method that includes cleaning a plasma reactor chamber part of a material redistributed thereon by a reactive plasma process. Such a cleaning includes placing the chamber part in a redistributed material solvent for at least 6 hours.

As is well established, anticipation requires the presence of a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.⁴

Because the *Background Art* does not show placing a chamber part in a material solvent for at least 6 hours, this ground of rejection is traversed.

Applicants' *Background Art* teaches a conventional wet chemical cleaning that utilizes the non-organic chemicals hydrogen peroxide and ammonium hydroxide. However, such a cleaning lasts for about 20 minutes.⁵ Thus, the *Background Art* does not show Applicants' claim limitation of at least 6 hours.

Accordingly, this ground of rejection is traversed.

³ *Walter*, Col. 1, Lines 29-42.

⁴ See *Lindemann Maschinenfabrick GmbH v. American Hoist & Derrick Col.*, 221 USPQ 481, 485 (Fed. Cir. 1984).

⁵ See Applicants' Specification, Page 2, Line 19 to Page 3, Line 1.

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Rejection of Claims 10-16 Under 35 U.S.C. §102(e) based on U.S. Patent No. 6,014,979 (*Van Autryve et al.*)

The rejection of claims 10-14 will first be addressed.

5 The invention of amended claim 10 includes a method of cleaning a plasma reactor chamber part. The method includes plasma cleaning a chamber part of a material redistributed on the chamber part by a reactive plasma process, with a plasma having an etch selectivity between the chamber part and the redistributed material that is greater than 1:100. The method also includes cleaning the chamber part with a solvent of the redistributed material by placing the chamber part in the solvent of the redistributed material.

10 The reference *Van Autryve et al.* does not teach cleaning a chamber part by placing the chamber part in a solvent. *Van Autryve et al.* only shows a periodic "wet-clean" in which a process chamber is opened and scrubbed with an acid or solvent.⁶ A chamber part is never placed in a solvent, and recited in claim 10.

15 Thus, because the cited reference does not show all limitations of claim 10, the rejection of claims 10-14 is traversed.

The rejection of claims 15 and 16 will now be addressed.

20 The invention of amended claim 15 includes a method of cleaning reactive plasma chamber parts. The method includes applying an organic solvent to a surface of a chamber part and oxygen plasma cleaning the chamber part. The method further includes ultrasonically cleaning the chamber part after the oxygen plasma cleaning.

Van Autryve et al. is silent as to ultrasonically cleaning, thus cannot show such a limitation. Accordingly, this ground of rejection is traversed.

25 Rejection of Claims 1-9 and 17-20 Under 35 U.S.C. §103(a), based on *Van Autryve et al.* in view of the *Background Art*.

The rejection of claims 1-9 will first be addressed.

As is well known, to establish a prima facie case of obviousness, a rejection must meet three basic criteria. First, there must be some suggestion or motivation to modify a reference or

⁶ See *Van Autryve et al.*, Col. 11, Lines 10-15.

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combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference(s) must teach or suggest all claim limitations.

It is admitted that *Van Autryve et al.* does not teach placing a chamber part in a redistributed material solvent.⁷ While the *Background Art* teaches a wet chemical clean, such a
5 clean is about 20 minutes, and thus is not suggestive of Applicants' claimed time period of at least 6 hours. To show such a time limitation, the rejection appears to modify the reference teachings based on the following rationale.

10 Cleaning time is a result effective variable. It would have been obvious to an ordinary artisan at the time the invention was made to find an optimum cleaning time by routine experimentation.⁸

However, the following is well established:

15 A prima facie case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention.⁹

The modification proposed in the rejection is not obvious as the reference clearly teaches away from such a modification. Applicants' *Background Art* states the following:

20 A wet clean of H₂O₂ and NH₂OH may etch quartz surfaces changing surface textures. Changes in chamber part surfaces may result in drift in an etch process, as a changing surface conditions may alter gas flows and or etch chemistry. Further, because cleaning may consume etch chamber parts, such parts may have
25 to be periodically replaced.¹⁰

From the above, it is clear that the proposed modification would exacerbate the above drawbacks to a wet cleaning by (1) etching quartz surfaces faster, thus further altering properties and (2)

⁷ See the Office Action, dated 12/18/02, Section 10, Second Paragraph.

⁸ See the Office Action, dated 12/18/02, Page 6, Lines 7-9.

⁹ *In re Geisler*, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

¹⁰ See the Applicants' Specification, Page 3, Lines 9-13.

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increasing the rate at which such parts must be replaced.

Thus, because the proposed modification teaches away the reference relied upon, such a modification cannot be obvious, and this ground of rejection is traversed.

5 The rejection of claims 17-20 will now be addressed.

As noted above, the references do not show a step of ultrasonically cleaning a chamber part. However, such a step is not believed to be obvious. The sole rationale relied to show such a limitation is set forth below.

10 [T]he use of ultrasonic to enhance liquid cleaning and scrubbing cleaning was well-known and conventional in the art.

This rationale is not sufficient to establish a prima facie case of obviousness. As is well known, any proposed modification must be supported by a suggestion or motivation from the
15 prior art. The above rationale lacks this necessary element. Said in another way:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.¹¹

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The rejection has not indicated why such a step would be desirable. Applicants note that such a change does not appear desirable as *Van Autryve et al.* appears to teach away from such a step. The reference never teaches removing a chamber part from a chamber.

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¹¹ In re Mills, 16 USPQ2d 1430 (Fed. Cir. 1990)

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Claims 1, 10 and 15 have been amended. Claims 4, 14, and 17 have been cancelled. The present claims 1-3, 5-13, 15-16 and 18-20 are believed to be in allowable form. It is respectfully requested that the application be forwarded for allowance and issue.

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Respectfully Submitted,

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